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REMARKS

Claims 1, 3-21 and 37 are pending in the present application. In the Office Action of July 31, 2003, the Examiner made the following disposition:

- A.) Objected to claim 16.
- B.) Rejected claims 1, 3 and 37 under 35 U.S.C. §103(a) as being unpatentable over *Kiryushev et al.*
- C.) Rejected claim 16 under 35 U.S.C. §103(a) as being unpatentable over *Kiryushev et al.* in view of *Nishimura et al.*
- D.) Rejected claims 17-21 under 35 U.S.C. §103(a) as being unpatentable over *Kiryushev et al.* in view of *Anvekar.*
- E.) Objected to claims 4-15.

Applicant respectfully traverses the rejections and addresses the Examiner's disposition as follows:

A.) Objection to claim 16:

Claim 16 has been amended as per the Examiner's request to overcome the objection.

Applicant respectfully submits the objection has been overcome and requests that it be withdrawn.

B.) Rejection of claims 1, 3 and 37 under 35 U.S.C. §103(a) as being unpatentable over *Kiryushev et al.*:

Applicant respectfully disagrees with the rejection.

Applicant's independent claims 1 and 37, each as amended, each claim paths of photons that are provided by a plurality of first optical fibers and a plurality of second optical fibers or optical waveguides that are disposed in a form of a grating in a two-dimensional plane. The second optical fibers or optical waveguides contact along and partially surround a length of an arc of an outer circumferences of the first optical fibers at an intersection thereof. (See, e.g., Figure 5). A photon beam introduced into a selected one of the first optical fibers is divided at the intersection to create dual signals correlated to each other. One of the dual signals is transmitted through within the selected first optical fiber, the other of the dual signals being led

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out from the selected first optical fiber externally of the two-dimensional plane at the intersection.

This is clearly unlike *Kiryushev*, which fails to disclose or suggest second optical fibers or optical waveguides that contact along and partially surround a length of an arc of an outer circumferences of first optical fibers at an intersection thereof. Referring to *Kiryushev* Figure 5, *Kiryushev* discloses a second optical fiber 22 that contact a first optical fiber 24 at one point of the first optical fiber 24. Thus, unlike Applicant's claims 1 and 37, *Kiryushev's* second optical fiber does not contact along a length of an arc of an outer circumference of *Kiryushev's* first optical fiber. Instead, *Kiryushev's* second optical fiber merely touches its first optical fiber at one point.

Accordingly, *Kiryushev's* optical fiber intersections fails to teach Applicant's claimed optical fiber intersections. And further, *Kiryushev's* optical fiber intersections fail to lead out one of a dual signal as well as Applicant's claimed optical fiber intersection. Therefore, *Kiryushev* fails to disclose or suggest Applicant's claims 1 and 37.

Claim 3 depends directly or indirectly from claim 1 and is therefore allowable for at least the same reasons that claim 1 is allowable.

Applicant respectfully submits the rejection has been overcome and requests that it be withdrawn.

C.) Rejection of claim 16 under 35 U.S.C. §103(a) as being unpatentable over *Kiryushev et al.* in view of *Nishimura et al.*:

Applicant respectfully disagrees with the rejection.

Claim 1 is allowable over *Kiryushev* as discussed above. *Nishimura* still fails to disclose or suggest second optical fibers or optical waveguides that contact along and partially surround a length of an arc of an outer circumferences of first optical fibers at an intersection thereof. Therefore, *Kiryushev* in view of *Nishimura* still fails to disclose or suggest claim 1.

Claim 16 depends directly or indirectly from claim 1 and is therefore allowable for at least the same reasons that claim 1 is allowable.

Applicant respectfully submits the rejection has been overcome and requests that it be withdrawn.

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D.) Rejection of claims 17-21 under 35 U.S.C. §103(a) as being unpatentable over *Kiryushev et al.* in view of *Anvekar*:

Applicant respectfully disagrees with the rejection.

Similar to claims 1 and 37, independent claim 17, as amended, claims paths of photons that are provided by a plurality of first optical fibers and a plurality of second optical fibers or optical waveguides that are disposed in a form of a grating in a two-dimensional plane. The second optical fibers or optical waveguides contact along and partially surround a length of an arc of an outer circumferences of the first optical fibers at an intersection thereof. (See, e.g., Figure 5). A photon beam introduced into a selected one of the first optical fibers is divided at the intersection to create dual signals correlated to each other. One of the dual signals is transmitted through within the selected first optical fiber, the other of the dual signals being led out from the selected first optical fiber externally of the two-dimensional plane at the intersection.

This is clearly unlike *Kiryushev*, which fails to disclose or suggest second optical fibers or optical waveguides that contact along and partially surround a length of an arc of an outer circumferences of first optical fibers at an intersection thereof. Referring to *Kiryushev* Figure 5, *Kiryushev* discloses a second optical fiber 22 that contact a first optical fiber 24 at one point of the first optical fiber 24. Thus, unlike Applicant's claim 17, *Kiryushev's* second optical fiber does not contact along a length of an arc of an outer circumference of *Kiryushev's* first optical fiber. Instead, *Kiryushev's* second optical fiber merely touches its first optical fiber at one point.

Accordingly, *Kiryushev's* optical fiber intersections fails to teach Applicant's claimed optical fiber intersections. And further, *Kiryushev's* optical fiber intersections fail to lead out one of a dual signal as well as Applicant's claimed optical fiber intersection. Therefore, *Kiryushev* fails to disclose or suggest Applicant's claim 17.

Claims 18-21 depend directly or indirectly from claim 17 and are therefore allowable for at least the same reasons that claim 17 is allowable.

Applicant respectfully submits the rejection has been overcome and requests that it be withdrawn.

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E.) Objection to claims 4-15:

Applicant respectfully acknowledges the Examiner's finding of allowable subject matter in claims 4-15.

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Claims 4-15 depend directly or indirectly from claim 1 and are therefore allowable for at least the same reasons that claim 1 is allowable.

Applicant respectfully submit the objection has been overcome and requests that it be withdrawn.

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Conclusion

In view of the foregoing discussion and analysis, Applicant respectfully submits that  
claims 1, 3-21 and 37, are in a condition for allowance, which action is earnestly solicited.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited as First Class Mail in an envelope addressed to Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450 on October 29, 2003.

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